Matthew Carroll

His Quest to Take the Power Out of Error

By Alex Viktora

In 1999 Matt Carroll graduates with an environmental degree from a small liberal arts school in Maine. He decides to celebrate by pedaling his bike from Yorktown, Virginia to Seattle, Washington.

Once out west, Matt gets exposed to wildland fire. He's immediately attracted to it. He ends up getting on the Baker River Hotshots. His first big campaign fire is Cerro Grande. After three seasons on Baker River, Matt rookies with the McCall Smokejumpers. He's been with McCall ever since.

After the 2008 season, Matt is accepted to the Yale School of Forestry and Environmental Studies. He takes a break from jumping and graduates from Yale with a Master's Degree in Forestry in 2010.

Matt Carroll, McCall Smokejumper

Is it true that after graduating with an advanced degree from Yale University, you decided to return to jumping?

"Yes. I guess there was a chance that I could go out and make something of myself after that. But I decided to go back and become a smokejumper again. I made that decision because I missed it and because I really thought there was still quite a bit more to learn. For me, that's where you need to be in life—in places where you're learning quite a bit."

And now you've been detailed into the 'Office of Learning'. What's that all about?

"It's an office that was chartered by the Chief of the Forest Service in 2013. It operates under the agency's Office of Health and Safety. Our intent is to help the Forest Service build capacity as a 'learning organization'. The first part has been introducing the concept of 'Margin'."

What is 'Margin'?

Watch this video Matt made on 'Margin' !

http://youtu.be/B5CCqmxgc3s

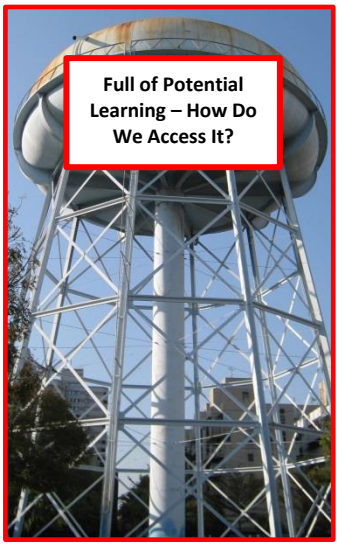
"Margin is a model. It is a way that we can view the world that is hopefully helpful to us. It isn't 100 percent accurate. Most importantly, it's nothing new. What we've done is we've taken a bunch of ideas and sort of like jazz, sort of riffed on them to help them make sense to us. It's based on the principle that success is not measured as an error-free system. It's measured as a system that can tolerate error and uncertainty. And how we operate in the system, we can either build or reduce Margin—the amount of room we have for error, for uncertainty, to happen. The larger our margin is, the more options we have. So it's just a concept that kind of wraps up a bunch of stuff and allows us to describe the environment as a whole.

One of the things we really hope comes out of this discussion about Margin is it provides language that we can talk to one another about the system as a whole. As Travis Dotson likes to say: 'Instigate Dialogue'. It is not about arguing; it's about getting people to talk and have dialogue. So instead of defining success as, you know, *'everyone went home safe and the job got done'*, we can change that to *'we got the job done and everyone did go home safe—but we got really lucky at times. We got really close. We actually operated within a razor-thin Margin'*. And maybe that's more the definition of 'success' that we want. That it's something to measure how lucky we get. Because so many of these FLA's or RLS's—these learning tools we now have—are about an unintended outcome. And that's just a fraction of the outcomes that we have. If we can start learning from more and more outcomes, I think that's better.

That's a short snippet on Margin."

In the wildland fire service, how much 'Margin' have we built around learning?

"Margin is about creating space or capacity. How much capacity have we built around learning? How much 'ability' or 'potential' do we have around learning? I think we have an incredible amount of potential learning. We have warehouses full of information, both physical and virtual. At the local level we have lots of information being shared. And we have changes in behavior from that. We have lots of potential—both individually and organizationally—to learn. I think we have an incredible opportunity now to be really creative in how we access that learning, or how we build desire to actually translate that potential learning into actual learning.



Picture a water tower. We've put the energy and the resources and the money into collecting and building potential learning into this water tower. Now we have to find the ways to come up with these very catchy, sticky ways of accessing that information and making it desirable.

I just finished an FLA. There is a lot of potential learning in there, but very few places or ways to access this learning. And that's where I think we have water towers full of potential and all of the opportunity in the world to find out how to access this potential learning and make it desirable."

Who do you think benefits from the FLA process?

"I benefit. I've done three FLAs that I did by myself. They were somewhere between an RLS and an FLA. Then I did a full-blown FLA. On every one of those, I learned a phenomenal amount. That's what I love doing. You start connecting the dots. You learn so much.

I think those people who have to endure an FLA, who have to sit and work through and take part in interviews and review documents and take a look at their organization from the perspective of 'outside' people, I think they benefit a lot, too. Having a bunch of people who aren't familiar with your organization coming in at a time when there is an unintended outcome and peering into your world—at the particular way you do things—is really quite uncomfortable. In working through that uncomfortableness, people have a great potential to learn. And, I think, more often than not, they do learn and benefit from the FLA.

We are just at the beginning of the numerous possibilities that we have to capitalize on. Going back to that water tower example—the potential learning that we have. We have documents full of potential learning. Really, right now we're asking people to climb up a 50-foot ladder to get to that bucket of water and bring it back down. The water tower is there for anyone to access. It's just a matter of a means or a process or however you want to try to get at it. Find that way that makes that potential learning accessible and practicable."

Matt on the Baker River Hotshot Crew.

What lessons regarding learning from the smokejumper world/culture can be shared with the greater wildland fire service?

"The first one is that we train a lot. We do a lot of practice jumps. We do the tower work even before we get in the planes to jump out of them. And for situations where we need to rely on our bodies and our behaviors to do a certain thing, we train very well at that.

For two years I was a rookie trainer. In that role you can watch as someone both intellectually and physically learns behaviors on how to either exit the aircraft to respond to an emergency parachute malfunction, or does a good parachute landing fall. You can watch as they learn those things until they become so routine. Honestly, the first couple of times you go out of the airplane, well, I'll speak for myself. I couldn't even tell you if my eyes were open before the parachute opened. And the fact that I did the motions correctly speaks to this, the ability for us to train to these very specific behaviors. That's one small aspect of it.

The other aspect is that the jumper community tends to be a fairly 'flat' organization. In other words, there's a lot of GS-5, -6, -7s who are jumping—who aren't supervising one another. They're more or less equals with different sets of quals. There's a lot of humility and humbleness in that scenario. I think that's a key component.

I remember a time we went out and jumped and they had a mock medical scenario. I was the lead. So I had my hands on the person's head to immobilize the spine. All of a sudden I found myself trying to micromanage putting on a traction splint. So, you know, I had the person's head—incorrectly—bobbling around.

That level of humility of then being able to say *'I screwed that up'* and having the time and the culture that we're going to go back over that. You're among peers who are equally as humble and who are going to talk about all of the times that they succeeded and the times that they didn't succeed—all of the times that they didn't perform as they would have liked, or the outcome wasn't what they wanted.

In that humility comes the vulnerability, too. You have to open yourself up out there and call it like it is. Because you're expected to perform at a very high level in such a range of conditions. If you are not willing to accept—to be humble enough and have the humility to accept—who you are then you will not succeed in that culture. We can have those honest, vulnerable conversations with one another. We open ourselves up for judgment within our community to make sure that the information gets out. And that's where I see the smokejumper organization doing so well.

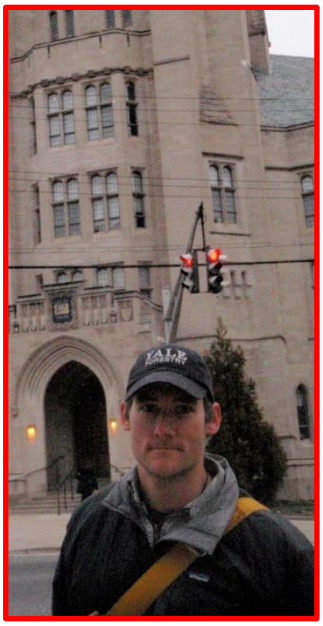
That's one of the things that brought me back after graduating from Yale. The fact that I still had lots to learn from this community of people. I knew that to take advantage of that learning you have to be vulnerable. And to be vulnerable you have to trust your community. So it's this little loop of trust and vulnerability that we're able to maintain—but we may not necessarily do such a great job at sharing this. So, yes, I think there's a great opportunity there for us to share more with the greater fire service community."

Not everyone in our workforce is what you might call 'A Student of Fire'. What responsibility do we have to make sure that these folks are also learning?

"First, I don't believe there's a consensus on what 'Student of Fire' means. What it means for me is that you are a student of everything that is involved in fire. I go back to 'Margin', to all of the conditions that affect your Margin in the fire environment. So that being a Student of Fire is being aware of how your emotions play into your decision making, being a student of the group dynamic, being a student of how organizational influences either increase or decrease the 'error tolerance' of your system, of your operation.

I don't think we can be responsible for people learning because we—the organization, the fire service—cannot make people learn. You choose to learn or not to learn. And we all have a limited amount of time. We all have other things that are pulling at us. But if you are in this job and you are choosing not to engage we cannot make you learn. My point on this is if you are choosing not to learn, if you are choosing not to engage, I think you are a liability to yourself and people around you.

But the fire service does have a responsibility to provide access to learning. It goes back to the water tower analogy. I think the fire service can improve at this."



Matt at Yale.

Is the definition of 'Learning' improving our own individual performance, or is it more a matter of changing the system?

"I think it's both. Are we putting our emphasis on trying to get more performance out of people because we believe the system is as good as we can make it, versus acknowledging that the system is inherently full of complexity and things that we don't understand and uncertainties and downright contradictions: So where do we put our emphasis? The answer is both. But I think that we're not going to get there by telling people to be better people. If we don't address why we are putting people in the situations we put people in, we're never going to get all the way to where we want to go.

I don't think 'zero fatalities' is an attainable goal. I think it is a workable direction and it's a direction we want to go—whether we're ever going to get there is not the point. It is the direction we should be going. So as we move in the right direction, you're never going to get as far as you want to get by only trying to squeeze more performance out of people.

Right now we have a contract with the public we serve that says that we're going to do this firefighting thing and we're going to manage fire on the landscape, but we're not going to die. That's a false contract. Every time we have fatalities or serious injuries or damage to private property, we get sued, we get fined. We get all these things that tell us that we're supposed to do this thing but we're not supposed to have these unintended outcomes.

So we need to have a conversation with the public in general—*and with ourselves*—about what really are the values and what are we willing to risk to protect those values.

We have spent a lot of time in the past improving performance, because it's easy. And, because we've done such great work on this front, you'll find that it takes more and more effort to get any more little bits of performance out of people. We've given people radios. We've done L380 classes, the entire L series classes. We've done a lot of great stuff. It's massive improvement. And now we're getting to the tail end of that improvement where a lot of effort is required to change a little bit. That is not to say we should not invest in helping people perform better. But to make real headway toward 'zero fatalities' we need to address the 'false contract' we have with ourselves and the public."

The Wildland Fire Lessons Learned Center's motto is 'A Lesson is Learned When We Change Our Behavior'. In your mind, is this a fair way to measure learning ?

"I think we learn all the time. We change behavior all the time. So it's almost a 'scale' thing to me. I think that we're real good at learning and it's a fair measure. But like 'Rapid Lesson Sharing' or the smokejumper 'mission incident' form where we send out an email saying, in effect, *'Hey, this little thing happened – Here's something very actionable,'* and we change it.

And even smaller than that, if I touch something hot—I don't touch it again. I'm learning. I'm changing my behavior. We as humans are really quite good at learning and adapting. But it's different at this larger scale—when we talk about learning as an individual versus learning as an organization. And to be honest, I still can't quite picture what 'organizational learning' would look like. There are glimpses out there of what I think is 'organizational learning'. That's why my work with the Office of Learning is so interesting. I get to explore these glimpses in more depth and see what makes them work. I am in a fortunate position. I am learning quite a bit."

Can you share a favorite jump story that relates to learning ?

Matt Carroll

"I jumped a fire in Idaho. We jumped a ridge and started to work the ridge with a bunch of folks. We split up like we always do. So it was me and a couple other folks working down this ridge. It got to be nighttime. There was a hotshot crew working up toward us. We were going to meet somewhere in the middle. But we were building line downhill, with fire below us—at night. We were running low on options. We could either disengage or continue downhill. Based on the Intel from a Division Supervisor, we only had a couple more chains to go to meet-up with the crew coming up—they were just around the corner, right? You always get that—it's like they're literally just around the corner.

So, you know, now we've got on head lamps and the whole time we're heading down, we're like, we're building downhill fire line. We can't see the line below us. We can't really see where the fire is down there—whether it's in the drainage that we're in or not. We keep saying this.

Right as the sun was going down, we had this inversion set up. So we had cold air sinking down into the valley and all this really warm air just above it. Inside that warm air layer, fire started to pick up. Got a call from the shot crew that they had lost the piece of line that they were digging and it had slopped over and now was on the hillside where we were and was heading up the hill.

We started working our way downhill toward the fire because we thought that other crew was right there. Twenty minutes later we were running, you know, down scree slopes and trying to sidehill to get above it and then running some more. After 20 minutes of this, we finally came to the other crew who had picked up this slop and were starting to work their way around it.

When I got halfway down I found myself in the gut of that drainage. It was one of those: *'You idiot, how did you get here?'* And you have that 'OH, S H # T' moment where you can see exactly all of the things that you had taken for granted all day long, all of those curious circumstances that now lined-up, all of those weak signals, all of those things that you hear about in reports—that had been there all day long.

And you're left with the reality of 'this is the path I took to get here'. These are the assumptions that I made and the ones that were wrong. These are all the circumstances that came together. This is what they're going to write in the paper tomorrow when they find my body burned in the bottom of this drainage. And those moments are so key. And I will admit we did not do a good job. This is where I try to focus now in my job at the Office of Learning.

We went to the District Office and slept for the night. It wasn't talked about. We didn't say anything. So all of that stuff I mentioned earlier about humility and everything, for some reason it fell apart that night. No one got hurt. There were no reportable injuries. The fire never really made a run uphill, but we got lucky. *We got lucky*.

So what I'm doing now in the Office of Learning is trying to help that communication. Back on that fire, we didn't have a way to talk about the fact that we actually made it out. That we got lucky. We didn't have the in-depth language to talk about getting lucky.

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My work now is to provide that language so we can talk about those times we get lucky and to take the mystery out of it—take the power out of error. If we all admit to it, if we all accept that we're going to make these errors, we can take the power out of it. For me, that's the necessary transition. I keep going back to that. I'm incredibly fortunate that I was able to have an 'Aha' moment.

Folks last year, folks this year, a pilot yesterday, their 'Aha' moment may have been the second before they died. So I need to take my 'Aha' moment and work with it. That's what's so exciting about what I do. And that's why it's so important for me to stay tied to being in the field and interacting physically. And letting everyone know smokejumpers aren't infallible. We have room to grow and so does the entire community. We all need to work to take the power out of error. Because as long as we think it's a bad thing, it'll continue to have power over us.

Once we accept that it's something that's going to happen, we can start talking about it with that sense of humility that is required and really instigates learning."

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